

Comment 18:

IDEM Failed to Properly Identify, Analyze and Describe its Existing CWIS Intake Equipment Affects, Mitigates and/or Minimizes Biological Damage

Nothing in Applicant's August 2012 CWIS Documentation addresses or demonstrates how the physical and operational features of Applicant's CWIS intake equipment either cause, contribute to, mitigate and/or minimize "adverse environmental impacts" in the form of fish and aquatic fauna mortality, which as described above is an essential part of BTA-BPJ analysis. For example, both the Applicant and IDEM give no reason at all why the reported "average through-screen velocity" as determined by diver inspection ought to be considered as parameter values demonstrating measures deemed or considered to reduce or minimize fish and aquatic life damage. A scientifically defensible review would need to show how, why, whether and to what extent the Applicant-submitted single-day-diver-measured "through-screen" velocities as a demonstration of claimed protectiveness should be considered as a demonstration of "minimizing adverse environmental impacts" or otherwise as a mitigation measure to limit or reduce entrainment and/or impingement losses.

Response 18:

See Response 9.

Comment 19:

IDEM's Acceptance of a Demonstration of Measured "Through Screen Velocities" Based on an 85 MGD Flow Rate Cannot be Considered as a Demonstration that § 316(b) Requirements are Met

From an operational evaluation standpoint, both Applicant and IDEM portray the intake velocity performance that occurred on November 13, 2009 in the diver-measured inspection during a portion of that day as being characteristic of facility operations for decision-making purposes. However, the diver-measured facial velocities depicted in the IDEM Fact Sheet and in Applicant's CWIS August 2012 Documentation can only be considered as characteristic of intake operations at the claimed 85 MGD flow rate occurring on November 13, 2009 or at a lesser rate. Since monthly average calculated actual intake flow rates up to 114.8 MGD occurred as recently as September, 2011, a proper determination of CWIS intake protectiveness must necessarily consider the performance of the intake as to inlet facial velocity matters occurring at the *maximum* refinery water station pumping rates expected during normal present operations and during future refinery expansion operations. As discussed above, Commenters calculated an estimate of 1942 intake flow of over 80 MGD from this inlet during the diver-inspection facial velocity measurements, while Applicant predicted a 67% flow equal to 57 MGD at the 1942 intake during the inspection. Nothing in Applicant's August 2012 CWIS Documentation or in IDEM's Fact Sheet explains or addresses why a monthly average of daily actual intake values

(as calculated and not directly measured) should be considered to be an appropriate quantitative intake physical operations indicator parameter sufficient to inform decision-making to assure compliance with intake facial plane orthogonal velocity performance that must be maintained on a very short term basis to maintain biological damage reduction and mitigation under all circumstances. At the very least, IDEM should have addressed short term variability in the refinery's CWIS intake facial plane orthogonal velocity rates and the effect of such short term variability on the expected protectiveness of intake performance at both Lake Michigan intakes.

IDEM's Should Not Have Accepted Applicant's Calculated Actual Intake Flow Data in the Absence of Applicant's Disclosure of its Intake Flow Calculation and Flow Proportioning Algorithms and Calculation Methodology

IDEM should not have accepted the Applicant's method of calculating combined total inlet flows on the basis of discharge flow monitored values and calculated flow proportioning factors between the two inlet tunnels without first performing an engineering review of Applicant's inlet flow calculations and without a public showing in the record of such calculations. IDEM's acceptance of Applicant's calculated intake flow rates based on discharge outfall flow monitoring and 'back calculating' intake rate value means that no public record exists which can be used to verify Applicant's calculated intake volumetric rates. Such verification is necessary to ensure that the BTA decision is made in a defensible scientific manner according to a standard of Best Professional Judgment (BPJ) review.

Response 19:

See Response 11.

Comment 20:

Applicant's Outfall 005 and 002 Effluent Flow Characterization Raises Questions as to Whether IDEM's BTA-BPJ Review Properly Considered Maximum Potential Intake Volumetric Rate Variability on Intake Facial Velocity Performance

Applicant's NPDES Application contained the following volumetric flow specifications for Outfalls 002 and 005:

[Flow in MGD]	Maximum Daily Flow	Maximum 30 day average of Daily Flow	Long Term Average
Outfall #002	98.	86.2	73.7
Outfall #005	27.	19.9	15.7
TOTAL	126.1	106.1	89.4

An additional application data element shows in a Water Flow Diagram contained in Applicant's NPDES renewal submittal and shown as Exhibit 9. This sheet identifies a maximum monthly average of daily flow to be 111.14 MGD.

This volumetric rate data raises questions again about the potential variability of the intake flow in light of these combined discharge numbers. IDEM's implicit assumption that a depiction of diver measured intake inlet facial plane orthogonal flow velocities at a combined total tunnel intake flow rate of 85 MGD as occurred during the diver inspection can be considered characteristic of performance at expected higher daily intake flow rates which will occur frequently at Applicant's facility was inappropriate.

As discussed above, Applicant does not operate flow rate monitoring devices on the two CWIS intake tunnels to the two Lake Michigan intakes. Such continuous monitoring of intake tunnel flow rates is a technically feasible and available technology for parameter monitoring to help ensure and guarantee that intake inlet facial plane orthogonal velocity performance of intakes will reflect performance in compliance with 33 U.S.C. §316(b) in minimizing adverse environmental impacts.

However, in IDEM's BTA demonstration and review of how the Applicant considers or monitors performance IDEM relies only on what the Applicant has proposed for intake system monitoring in general and for intake tunnel volumetric flow rate monitoring specifically. IDEM did not consider other techniques of monitoring and specifically did not consider requiring the Applicant to do direct flow rate monitoring in each of Applicant's two tunnels to Lake Michigan.

IDEM's BTA demonstration thus fails from an intake process monitoring standpoint. IDEM's decision considered as "best" a combined total intake volumetric calculation method based on outfall flow rates and 'back calculation' of intake flow rates together with an unverified/undisclosed calculated theoretical flow rate proportioning ratio method between the two intakes. IDEM's BTA intake monitoring decision preferring Applicant's calculated results over the use of actual continuous volumetric rate monitoring in Applicant's two intake tunnels is therefore in error.

Response 20:

See Response 11.

Comment 21:

Applicant's and IDEM's Description of "Through-Screen Velocity" Obscures the Fact that Both of Applicant's Lake Michigan Intakes Will Cause 100% Mortalities as Entrainment Trapping Losses

Applicant and IDEM do not disclose or explain that the stated intake facial plane "through-screen velocities" as articulated on page 44 have nothing to do with

screens and nothing to do with avoiding impingement losses at the facial plane of the intake inlet openings. In fact, fish and aquatic life that become entrained in Applicant's intake flow will be subjected to chlorination at concentrations well above Indiana water quality standards. Fish and aquatic organisms that survive inlet tunnel chlorination but remained trapped in the tunnel will not survive Water Station and refinery water main process-related screening operations, pumping operations and thermal loads.

IDEM and Applicant should have acknowledged the mortality effects and the 100% fish entrainment losses in the present and existing system with few if any measures to reduce such damages or to address exclusion from intake entrainment.

Response 21:

The best way to reduce mortality from entrainment is to reduce the volume of water being withdrawn, BP has been reducing their use of intake water at the refinery. See Response 9

Comment 22:

IDEM's Best Technology Available Determination Fails to Address the Effect of Intake Chlorination on Fish and Aquatic Mortalities in Applicant's Intake System

Determination of what intake technologies should be deemed to be BTA for minimizing adverse environmental impacts must necessarily consider the effects of intake chlorination for zebra/quagga mussel control on fish and aquatic fauna as an inextricably intertwined factor. However, IDEM's analysis and review of the intake matter fails to show and address the effect of intake chlorination on all features of intake-related aquatic biological protection and the 33 U.S.C. §1326(b) decision. For example, IDEM failed to conduct or require Applicant to provide an analysis of what effect intake chlorination practices will have on the performance and efficacy of a potential fish return system at Applicant's CWIS water intake system. Realistic assessment of intake chlorination practices on fish return systems and fish survival inside of Applicant's intake tunnels may mitigate for installation of entrainment exclusion controls and intake inlet screens rather than a fish return system at this facility in a revised BTA demonstration addressing Applicant's intake equipment.

Response 22:

The use of chlorine to prevent the growth of mussels in the CWIS and the intake pipes is considered to be the application of a FIFRA registered substance in accordance with label instructions and at that time the chlorine is not considered or treated as a pollutant. IDEM has no reason to believe that chlorine is escaping into Lake Michigan due to the fact that it is applied to the CWIS at a point where the intake velocity will pull the chlorine into the CWIS, therefore, IDEM does not believe any additional permit related requirements are needed at this time.

Comment 23:**IDEM Failed to Require Applicant to Fully Vet Alternative Intake Technology for Intake Flow Reduction**

Neither IDEM's BTA demonstration nor Applicant's CWIS documentation provide complete vetting and appropriate consideration of alternative intake flow reduction technology. IDEM's BTA determination contains no consideration of alternative flow reduction through use of additional closed cycle cooling tower units beyond the two additional units Applicant is installing as part of the Whiting Refinery expansion. Nothing in IDEM's determination indicates the extent and magnitude of Applicant's existing commitments to existing cooling tower units, including a complete description of the heat dissipation load carried by the existing cooling tower units as compared to the total refinery heat load and the proportion discharged through single pass cooling water systems. Such analysis should have included, at minimum, evaluation of intake flow reductions, fish return systems, alternate internal and inlet opening screen systems, use of adjacent fine mesh nets, and other intake mitigation and control techniques.

Response 23:

See Reponse 9.

Comment 24:**Applicant's Permit Application Effluent Characterization Shows that Certain Pollutant Aqueous Concentrations are Increasing**

Commenters examined aqueous pollutant concentration effluent data for Outfall #005 in Applicant's February 2012 NPDES permit renewal application and similar data for Outfall #001 contained in the 2006 NPDES permit application. That examination shows that Applicant's pollutant effluent concentrations increased from the time of the 2006 permit application to the filing of the February 2012 NPDES permit renewal application in the manner shown in the table below:

Outfall 005 Pollutant	Maximum Daily Effluent Concentration (mg/l)			Monthly Average Effluent Concentrations (mg/l)		
	2006	2012	Factor of increase - 2012 / 2006	2006	2012	Factor of increase - 2012 / 2006
Selenium	0.034	0.038	1.1	0.0215	0.035	1.6
Sulfate	370	868	2.3	315	701	2.2

Tot Dissolved Solids	980	2143	2.2	905	1721	1.9
Chlorides	424	611	1.4	263	392	1.5
Arsenic	0.0077	0.014	1.8	0.0071		
Lead	0.021	0.043	2.0	0.0077	0.005	
Manganese	0.089	0.12	1.3	0.073		
Strontium	0.78	0.90	1.2	0.53	0.61	1.2
Copper	0.0058	0.019	3.3	0.0029	0.0047	1.6
Arsenic	0.0077	0.014	1.8	0.0071		
Vanadium	0.63	0.84	1.3	0.37	0.55	1.5

All of the pollutants listed in the table above were subject to monitoring requirements and final water quality based effluent limitations in the pre-diffuser Outfall #001 2007 NPDES permit. However, the final water quality based effluent limitations for 2007 permit Outfall #001 never went into effect because the Applicant chose to install a diffuser regulated under Outfall #005 in the 2007 permit. Once the outlet diffuser was installed in Lake Michigan, Applicant as permit-holder became permanently subject to Outfall #005 effluent limitations in the 2007 permit which did not include the previous water quality based effluent limitations and monitoring requirements applicable to the pollutants regulated through Outfall #001 under the terms of the 2007 NPDES permit.

Only vanadium remains regulated under Outfall #005 in IDEM's Draft 2013 permit renewal. However, the 2013 permit vanadium allowed effluent limitations are significantly higher than what would have been allowed under final vanadium limits in the 2007 permit Outfall #001 effluent limit table.

Commenters request that IDEM locate historical flow rate information in order to determine if the Applicant increased its pollutant loadings to Lake Michigan as a result of these reported increases in aqueous pollutant concentrations in Outfall #005 during the term of the 2007 permit effectiveness. Once IDEM completes the task of determining whether the Applicant increased loading rates of the pollutants addressed, Commenters request that IDEM publish such findings for public review as part of the responsiveness summary in this matter. Further, Commenters request that IDEM clarify whether the Applicant caused such loading rate increases, when such increases occurred (including times before the diffuser went into operation) and whether any such loading increases triggered any aspect of regulatory concern.

Response 24:

IDEM conducted a simplified worst case RPE analysis of the new effluent data contained in the 2012 EPA Part 2C renewal application by developing a waste load allocation model using the dilution provided by the diffuser and comparing those WQBELs to the maximum Projected Effluent Quality (PEQ) in concentrations of mg/l which is based on the highest single data point multiplied by the maximum variability factor of 6.2 In accordance with 327 IAC 5-2-11.5 the PEQ is then compared to the Proposed Effluent Limitation (PEL). If the PEQ is less than the PEL, then there is no demonstrated reasonable potential for the effluent to cause an exceedance of the applicable water quality criteria. IDEM has retained the final effluent limits for Vanadium in the NPDES permit due to the reasonable potential for Vanadium to exceed the WQBEL.

Pollutant	Daily Maximum	Variability Factor	Maximum PEQ	<u>Monthly Average</u> WQBEL (PEL) In mg/l
Selenium	0.038	1.1	0.042	0.13
Sulfate	868	1.1	955	6,900
TDS	2,143	1.1	2357	18,000
Chloride	611.0	1.1	672	7,200
Arsenic	0.014	6.2	0.087	4.50
Lead	0.043	1.1	0.047	0.28
Manganese	0.12	6.2	0.74	21.0
Strontium	0.9	1.1	5.6	630.0
Copper	0.019	1.1	0.02	0.34
Vanadium	0.84	1.0	0.0.84	0.73

IDEM does not believe that antidegradation has been triggered by the apparent increase in effluent concentration of the substances listed above. BP was previously approved to utilize Canadian Heavy Crude Oil as their feedstock. Approval was based on information provided in the antidegradation demonstration that was submitted and approved with the issuance of the existing permit (issued in June 2007).

327 IAC 2-1.3-4(c)(2) states:

A new or increased loading that results from one (1) of the following activities that does not require the submission of information beyond what is required to comply with the discharger's existing applicable permit:

(A) A change in loading of a regulated pollutant within the existing capacity and processes that are covered by an existing applicable permit, including, but not limited to, the following:

(i) Normal operational variability, including, but not limited to, intermittent increased loadings due to wet weather conditions.

(ii) A change in intake water pollutants not caused by the discharger.

- (iii) Increasing the production hours of the facility, for example, adding a second shift.
- (iv) Increasing the rate of production.
- (v) A change at an internal outfall that does not directly discharge to a surface water of the state.
- (vi) A change in the applicable effluent limitation guideline based on a change in production.

The use of Canadian Heavy Crude Oil as feedstock is approved and regulated by the existing applicable permit. The effluent concentrations are within the range of BP's normal operational variability. There have been no changes in the intake water pollutants known or believed to be present. BP did not increase their 24 hours per day/365 days per year production schedule. There are no internal outfalls and the effluent limitation guidelines have not changed.

In addition, IDEM believes as BP introduces additional or refines the use of existing treatment system(s), the effluent quality will improve. It is appropriate to retain some of the parameters from the previous permit for monitoring purposes. This will provide more data and should demonstrate continued improvement in overall effluent quality as some of the new and/or improved treatment systems are incorporated at the BP site. IDEM will be adding the following parameters for continued monitoring: selenium, sulfate, Total Dissolved Solids (TDS), chlorides, arsenic, lead, manganese, strontium, copper, fluoride, benzo(a)pyrene, Total Residual Chlorine and nitrate-nitrites.

Comment 25:

Applicant's Nitrate Effluent Characterization in the August 2012 NPDES Permit Application Appears to be Inaccurate

Applicant's operations associated with processing increased amounts of tar sands synthetic crude is an activity that increases the flux of nitrogen as inputs to the Refinery wastewater system. In the ongoing Refinery expansion, Applicant is increasing capacity for sour water stripping which means additional loads of ammonia directed to the refinery's lakefront wastewater treatment plant.

In reviewing Applicant's August 2012 effluent characterization, Applicant indicated that nitrates were "believed absent" and a concentration value of <0.1 mg/l was listed. In addition to this data, Commenters reviewed Applicant's entire history of TRI reports on water effluents listed for nitrate compounds. Over the entire history that nitrate compounds have been reportable TRI compounds for water effluent reporting up to the most recent reporting year, Applicant has never submitted any such TRI water effluent reports for nitrate compounds to U.S. EPA.

However, Applicant's 2006 NPDES permit renewal application contains several indications the Whiting Refinery wastewater treatment plant discharges substantial nitrate compound effluents from its facility WWTP operations. All of these admissions are contained in Applicant's November, 2006 anti-degradation analysis. Exhibit 10 includes relevant pages from that analysis addressing the presence of nitrate in Applicant's process wastewater discharge.

In the "Addendum" portion of Exhibit 10 on page 1 of that document, Applicant's consultant states:

"The Lakefront WWTP is not specifically designed to degrade (nitrify) ammonia, however conditions do exist in the aeration tank that allow the growth of nitrifiers and the mass of these nitrifiers has been effective in degrading ammonia. The removal efficiency used for this Anti-Deg Analysis has been developed as follows Ammonia removal efficiency % = 70%"

The original volume of the cited report contains 3 tables in Exhibit 10 showing high daily rates of nitrate effluent. Table 12 of the document is entitled "BP Whiting Lakefront WWTP CXHO Nitrogen Evaluation (Modified with 2001=2002 Long Term Average)" and shows facility nitrate compounds calculated at 923 lbs per day, which is an annual rate of nitrate compound effluents of over 336,000 lbs/year.

These statements from 2006 contradict Applicant's own August 2012 NPDES permit application characterization of nitrate effluents. Applicant acknowledged in 2006 that nitrification bacteria colonized their aeration wastewater treatment unit and Applicant used and assumed the bacterial nitrification activity in their treatment units as a key strategy in their method for reducing ammonia effluents. Given such admissions from 2006, Applicant cannot credibly state on their NPDES application that nitrate effluents are believed absent.

At a nominal loading rate of 923 lbs. of nitrates per day and at the present flow rate of 19.9 MGD, aqueous concentrations of nitrate would nominally be expected to be about 5.6 mg/l, which is higher than the <0.1 mg/l concentration listed by the Applicant in the August 2012 NPDES permit application.

Commenters further note that Applicant's purported lack of nitrates in its effluent, if true, would be extremely unusual for the petroleum refinery industry, as the vast majority of large, existing refineries in the United States report over 10,000 lbs of TRI nitrate compound aqueous effluents annually. The Applicant should be required to provide further evidence to support an anomalous lack of nitrate, particularly in light of its 2006 statements.

Response 25:

A correction has been made to Form 2C by BP on July 31, 2013 to select believed present where appropriate. BP mistakenly reported that nitrates were "believed absent" in the effluent. The "believed present" box should have been checked knowing that there may be times when the nitrates may be above detection.

Higher concentrations of nitrogen are expected in extra-heavy crudes (more than in the current slate), and a conservative estimate of the possible effluent nitrate-nitrogen concentration at 5 mg/L was presented in the 2006 antidegradation demonstration. However, BP is not yet at full capacity and the modernization expansion is not yet

completed. When this occurs BP will be ready with the increased capacity of sour water stripping at the refinery, which is designed to remove most of the ammonia with stripped sour water design of 15 ppm ammonia. As a result, the amount of ammonia sent to the Lakefront WWTP is not expected to change, and the increased sour water capacity as well as the increased equalization capacity at the sour water strippers and in the new EQ/surge tank (5052) is expected to decrease any variability in influent ammonia concentrations. Ammonia as nitrogen concentrations reported on the form 2C during the same period of time the nitrate-nitrite data was reported was low at 0.22mg/l, hence nitrates would also be low.

Ammonia is removed by two mechanisms at the Lakefront WWTP. First, it is used as a nutrient by microorganisms that remove the organics (i.e. BOD/COD). The removed ammonia is wasted from the system through the excess biomass (WAS). Second, any remaining ammonia is converted by a second group of microorganisms (nitrifiers), which convert the ammonia to nitrates. The amount of ammonia nitrified depends on the concentration of ammonia, the concentration of total nitrogen, and the ratio of COD/BOD to N in the feed. At least some ammonia is nitrified in the Lakefront WWTP, and this is expected to continue. However, incidental nitrate reductions are likely in the anoxic zones in the activated sludge plant.

BP Whiting did not manufacture or process nitrate compounds at levels above the TRI reporting trigger, so they did not report nitrate compounds released to surface water during recent reporting years, with the exception of 2008. All other years did not require TRI reporting for nitrate compounds. Nitrates data would provide IDEM with information necessary to determine if effluent limitations will be required in the future. The BP permit renewal 2C application for outfall 005 has a Nitrate-Nitrite concentration of <0.1. but IDEM has decided to require Nitrate-Nitrite to be monitored and reported at Outfall 005.

Comment 26:

IDEM Should Reject Applicant's Operational and Monitoring Method Interpretation of the Outfall #005 Effluent Limitation for Phosphorus

Applicant's 2007 NPDES Permit and the present IDEM Draft Permit both contain effluent limitation and monitoring requirements for phosphorus. Applicant's February, 2012 NPDES application contains an effluent characterization report for Outfall #005 showing a title legend of "Phosphorus (as P), Total." However, the note at the bottom of the page states:

"Note: As per NPDES Permit, Ortho Phosphorus analysis is substituted for Total Phosphorus analysis"

However, Commenters have diligently searched both the existing 2007 permit and IDEM's Draft Permit, but can find no provision of either document which authorizes the Applicant to substitute the analytical method for ortho phosphorus instead of using the analytical method for total phosphorus.

Clearly, the absolute magnitude of reported phosphorus when using the analytical method for ortho phosphorus will be less than the absolute magnitude of an analytic result for reported phosphorus as total phosphorus on the same wastewater sample. IDEM must therefore clarify that the total phosphorus analytical method is required for compliance evaluation monitoring on the phosphorus effluent limitation. IDEM must determine if Applicant's use of the ortho phosphorus analytical method instead of the total phosphorus analytical method constitutes a long term violation of permit monitoring requirements since using the ortho-phosphorus method has the effect of deregulating that portion of total phosphorus effluents that are compounds which have not been oxidized to phosphate ion.

Response 26:

IDEM will specify in the permit that Total Phosphorus is the parameter for compliance evaluation monitoring for the Phosphorus effluent limit.

Comment 27:

Applicant Failed to Address Mercury Organo-Metallic Compounds

Applicant's wastewater characterization fails to address and/or identify organo-mercury compounds in the Refinery effluent. Compounds such as methyl mercury, ethyl mercury, and phenyl mercury are likely to be contained if Applicant's effluent because of inherent chemical and biological processes taking place in Applicant's facility. These compounds must be evaluated for aquatic toxicity and environmental fate if they are present in the facility's industrial process wastewater from Outfall #005.

IDEM should additionally clarify on the record whether reported total mercury analytical determinations using EPA Method 1631 Revision E reflect or do not reflect the amount and presence of methyl mercury, ethyl mercury and phenyl mercury contained in industrial wastewater samples analyzed under this EPA reporting method.

Response 27:

By definition in Method 1631 Revision E, total mercury is all BrCl-oxidizable mercury forms and species found in an unfiltered aqueous solution. This includes, but is not limited to, Hg(II), Hg(0), strongly organo-complexed Hg(II) compounds, adsorbed particulate Hg, and several tested covalently bound organo-mercurials (e.g., CH₃HgCl, (CH₃)₂Hg, and C₆H₅HgOOCCH₃). The recovery of Hg bound within microbial cells may require the additional step of UV photo-oxidation. In this method, total mercury and total recoverable mercury are synonymous.

Methyl mercury (CH₃Hg⁺), ethyl mercury (C₂H₅Hg⁺), and phenyl mercury (C₆H₅HgOOCCH₃) are all organomercury compounds.

Comment 28:

Applicant Failed to Submit the Ambient Lake Michigan Receiving Water Quality Data to Support the Permit Application

IDEM binding regulations at 327 IAC 5-2-3 on permit applications requires Applicant as a party seeking permit re-issuance to submit “valid, representative receiving water body monitoring data for every metal monitored or limited in the applicant’s existing permit.” Applicant failed to submit the required ambient Lake Michigan water quality data necessary for a complete application under 327 IAC 5-2-3.

Response 28:

IDEM did not find it necessary to request any additional water quality data for Lake Michigan due to the amount of existing water quality data.

Comment 29:

Neither the Applicant nor IDEM Submitted, Published or Produced a Current PEQ/PEL Analysis

Commenters have diligently searched materials disclosed by IDEM, including the NPDES permit application and the IDEM Fact Sheet, and none of these materials contains a current review of Projected Effluent Quality and Preliminary Effluent Limitations (PEQ/PEL analysis). Such analysis is necessary under 327 IAC 5-2-11.5 to justify the determination and setting of WQBELs contained in the permit as issued; or to justify excluding pollutants contained in Applicant’s Refinery wastewater effluents from consideration for WQBEL development.

Commenters object to any IDEM reliance for purposes of WQBEL determination and permit issuance decision-making on the previously produced 2006-2007 PEQ/PEL table for use in the present permitting matter. In the context of the present agency decision-making matter, the 2006-2007 PEQ/PEL analysis is out of date and cannot be relied upon as a valid analysis to reflect present effluent concentrations. This is particularly the case given that Applicant’s present effluent in 2012-2013 is considerably degraded compared to its previous 2006 effluent characterization for selenium, sulfate, chlorides, arsenic, lead, manganese, strontium, copper, arsenic and vanadium. See section V, *supra*, for a table that shows the quantified effluent quality degradation for these pollutants.

Commenters further object to IDEM’s use of the 2006-2007 PEQ/PEL analysis, and IDEM’s ongoing failure to produce more current analysis, for the reasons set forth in subsection C, *infra*. The 2006-2007 PEQ/PEL table implicitly relies on a dilution ratio at the edge of the alternate mixing zone provided as an artifact of the operation of the diffuser apparatus. However, as discussed in subsection C, the dilution strategy decision allowing that revised mixing zone edge dilution ratio was a decision not properly vetted or authorized under 40 C.F.R. §125.3 (f).

Response 29:

The following is a description of the process used to determine if the new effluent data contained in Forms 2C and 2F would indicate that there is a reasonable potential for a pollutant that is not currently limited in the NPDES to cause or contribute to an exceedance of the water quality criteria for that pollutant, specifically: selenium, sulfate, chloride, arsenic, lead, manganese, strontium, copper and vanadium.

IDEM relied on the data used in the 2006/2007 RPE analysis to establish the range of pollutant concentrations that were found to be present in the effluent and then compared the effluent values found in Form 2C to the dataset used in 2006/2007 to determine if the effluent data was still within the range found in the 2006/2007 dataset that was used to establish the need for the WQBELs in the 2007 NPDES permit.

IDEM also conducted a simplified worst case RPE analysis of the new effluent data contained in the 2012 2C application by developing a waste load allocation model using the dilution provided by the diffuser and comparing those WQBELs to the maximum PEQ possible which is based on the highest single data point times the maximum variability factor of 6.2. Also see Response 23.

Pollutant	Daily Maximum	Variability Factor	Maximum PEQ	<u>Monthly Average</u> WQBEL (PEL)In mg/l
Selenium	0.038	1.1	0.042	0.13
Sulfate	868	1.1	955	6,900
TDS	2,143	1.1	2357	18,000
Chloride	611.0	1.1	672	7,200
Arsenic	0.014	6.2	0.087	4.50
Lead	0.043	1.1	0.047	0.28
Manganese	0.12	6.2	0.74	21.0
Strontium	0.9	1.1	5.6	630.0
Copper	0.019	1.1	0.02	0.34
Vanadium	0.84	1.0	0.0.84	0.73

If not already limited, IDEM is requiring all of these parameters to be monitored at Outfall 005.

See response 24.

Comment 30:**The Diffuser Was Used as a Basis to Meet Water Quality Standards Without the Necessary Analysis**

The Applicant and IDEM failed – in both the 2007 NPDES permit and now in the Draft Permit – to properly vet the diffuser as a dilution method and the primary strategy to address water quality standard violations. EPA rules provide:

- (f) Technology-based treatment requirements cannot be satisfied through the use of “non-treatment” techniques such as flow augmentation and in-stream mechanical aerators. However, these techniques may be considered as a method of achieving water quality standards on a case-by-case basis when:
 - (1) The technology-based treatment requirements applicable to the discharge are not sufficient to achieve the standards;
 - (2) The discharger agrees to waive any opportunity to request a variance under section 301 (c), (g) or (h) of the Act; and
 - (3) The discharger demonstrates that such a technique is the preferred environmental and economic method to achieve the standards after consideration of alternatives such as advanced waste treatment, recycle and reuse, land disposal, changes in operating methods, and other available methods.”

40 C.F.R. 125.3(f). Because the installation of a diffuser was a non-treatment technique for meeting water quality standards, IDEM was required to use decision-making standards under 40 C.F.R. 125.3 (f) during the issuance of the 2007 permit to allow the dilution strategy to meet Indiana water quality standards in Lake Michigan receiving waters and to allow the alternate mixing zone intrinsic to the use of the end-of-pipe diffuser.

However, IDEM never required Applicant – either in 2007 or in the Draft Permit -- to submit a proper demonstration meeting all parts of the three criteria of the rule and no aspect of IDEM's 2007 permit issuance decision can be considered as a declaration and agency explanation that IDEM complied with all requirements of 40 C.F.R. 125.3(e) and (f) or that this issue was properly vetted and explained in the public notice or that it was otherwise an element of IDEM decision-making in the 2007 permit issuance.

As a practical matter neither IDEM nor Applicant could properly address all three factors so as to allow such a pollution effluent dilution scheme with the diffuser under the plain meaning of the provisions of 40 C.F.R. §125.3 (f). Neither IDEM nor Applicant made any inquiry into, or determined what level of effluent limitation control reflected BAT-BPJ for the non-ELG pollutants, so it would have been impossible to address the first factor with no issued BAT-BPJ effluent limitation or determination. On 40 C.F.R. §125.3(f)(2) evaluation, there is no evidence that the Applicant ever certified that it would give up the variance application rights articulated in that specific provision.

On 40 C.F.R. §125.3(f)(3) evaluation, Applicant and IDEM considered a portion of the issues articulated in the criteria for decision making, but no complete demonstration addressing all aspects of the required criteria was carried out in the 2007 permit issuance. In particular, a proper inquiry for good faith determination under 40 C.F.R. §125.3(f)(3) mitigates that alternatives such as considering what

effect that refinery feedstocks have on effluents and water quality compliance is a valid and needed exercise.

Response 30:

A diffuser does not augment or dilute the effluent. A diffuser results in rapid mixing of the effluent with the receiving water. The discharge is occurring in Lake Michigan within the mixing zone where discharge induced mixing already occurs.

The use of a diffuser does not constitute flow augmentation and does not require any additional approval by IDEM other than the approval process for an alternate mixing zone found in the Indiana Water Quality Standards (327 IAC 5-2-11.4) and NPDES permit implementation rules.

The NPDES permit limits meets all applicable water quality standards as required at the edge of the approved alternate mixing zone. The alternate mixing zone was appropriately approved by IDEM during the previous permitting process.

Comment 31:

As a result, no portion of the 2007 permit issuance matter addressing the use of non-control dilution methods to meet water quality standards can be considered as having been lawfully authorized by IDEM under 40 C.F.R. §125.2(f). Because the 2007 Permit matter and submittal were not properly authorized under 40 C.F.R. §125.2(f), IDEM cannot allow or use the 2007 decision as basis for the required 40 C.F.R. §125.2(f) demonstration in the present matter. Present issuance of an IDEM decision allowing a dilution strategy to meet water quality standards along with continued allowed use of a diffuser and alternate mixing zone must be considered in the present matter as a *de novo* agency decision based on the present permit application. Allowance of such continued dilution strategy practices that were previously authorized must be considered as being re-authorized in a permit re-issuance matter. Indeed, Applicant explicitly recognizes that its primary dilution strategy allowance to meet water quality standards with the diffuser must be re-authorized and justified in a permit re-issuance matter, as shown in Item #4 on page 4 of the Fact Sheet ("BP Whiting requests the continuation of the alternate mixing zone for the Outfall 005 high rate multiport diffuser, including the application of a 37.1:1 mixing ratio for water quality based effluent limit (WQBEL) development. Per part I.H.1 of the existing permit, BP submitted the diffuser operation and maintenance plant to IDEM (Current revision = 8/22/2011).

Although the Applicant requested renewal of the dilution strategy, the diffuser and the mixing zone, nothing in Applicant's submittal is or can be construed as a demonstration that complies with 40 C.F.R. §125.3(e) & (f) (and notably the 3 criteria under (f)) for continuing to allow a non-control dilution method. On review of IDEM's present matter and authorization under 40 C.F.R. §125.3(f)(2), Commenters can find no evidence of the required Applicant certification necessary to approve a request for

allowance of a non-control dilution method. Commenters can find no clearly articulated demonstration under 40 C.F.R. §125.3(f)(3) that justifies the renewal decision allowing the dilution strategy, diffuser operation and alternate mixing zone. It is thus evident that IDEM has not adequately considered the decision to allow the continued dilution strategy, diffuser operation and alternate mixing zone in a manner in compliance with the decision standards of 40 C.F.R. §125.3 (f).

Response 31:

See Response 30.

Comment 32:

The Permit Lacks Whole Effluent Toxicity Limitations

In issuing the Outfall #005 effluent limitations and monitoring table in the Draft Permit, IDEM eliminated both the acute and chronic Whole Effluent Toxicity ("WET") effluent limitations of 1.0 TUa and 1.0 TUC that were present in the existing permit Outfall #001 effluent limitations table. In addition, IDEM eliminated all acute WET testing in the Outfall #005 effluent limitations and monitoring table. Both of these changes are unacceptable for a facility effluent which contains increased amounts of toxicants and nonconventional pollutants with the advents of Applicant's increased utilization of tar sands crude feedstocks containing more metals, dissolved solids, sulfate and chlorides.

Neither the permit application nor the IDEM Fact Sheet contain a current PEQ/PEL determination on Whole Effluent Toxicity that was produced in association with the decision to issue the Draft Permit and to publish the IDEM Fact Sheet. As a result, IDEM's decision to terminate all WET effluent limitations and to terminate acute WET monitoring impermissibly depends on an analysis carried out in 2006-2007 of WET testing results on an effluent at that time whose quality is markedly degraded presently compared to the 2006-2007 time frame when the WET PEQ/PEL analysis was carried out.

Response 32:

The waste load allocation model completed in 2007 for the existing permit calculated a Chronic Toxic Unit Limit of 37 Toxic Units. That limit is still valid. BP has conducted Whole Effluent Toxicity tests of their effluent every six months and has yet to approach the level of 37 chronic toxic units. There is no reasonable potential for BP to exceed 37 chronic toxic units based on the data, therefore numeric effluent limits are not warranted.

IDEM has retained the permit requirement to conduct WET testing every six months and to conduct a toxicity identification evaluation and then a toxicity reduction evaluation if the effluent exceeds 37 chronic toxic units.

Comment 33:

The Draft Permit Materials Contain No Showing that Applicant Will Not Cause Acute Toxicity from Excessive Concentrations of WET Acute Toxic Units Inside of the Mixing Zone

Indiana Water Quality Standards prohibit effluent source discharges that cause acutely toxic concentrations of pollutants, including WET Acute Toxic Units, inside of discharge mixing zones pursuant to 327 IAC 2-1-6(a)(1)(E). The effect of these requirements is that dilution assumptions concerning the effluent after it leaves any portion of the diffuser apparatus must not be used in addressing whether the any portion of the diffuser effluent causes immediate acute toxicity inside the mixing zone.

Nothing in the IDEM Fact Sheet, the underlying file or in permit application is a demonstration or showing that Applicant's discharge of acute WET Toxic Units will not cause unacceptable and prohibited amounts of acute toxicity inside the approved mixing zone and directly adjacent to diffuser effluent discharge ports for the Outfall #005 discharge in violation of Indiana Water Quality Standards at 327 IAC 2-1-6(a)(1)(E).

Additionally, the failure of the Draft Permit to include both acute WET water quality based effluent limitations and acute WET monitoring requirements means that no effluent limitations and monitoring requirements on the end of pipe discharge protect and ensure compliance with the Indiana Water Quality Standard prohibition on acutely toxic amounts of WET discharged at any point inside of Applicant's approved alternate mixing zone.

Response 33:

Part G.1.f. contains both the acute and chronic triggers. A separate acute test is not required as those results may be extrapolated from chronic test data.

Comment 34:

IDEM Should Establish Internal Outfall Monitoring Points

In order to ensure proper and thorough monitoring, IDEM should reformat Applicant's permit in order to establish multiple internal outfalls for the sampling points for purposes of ongoing, permit-required technology-based effluent limitation compliance measurement and determination. For example, IDEM should establish internal outfalls, monitoring requirements for those outfalls and technology-based effluent limitations specific to those internal outfalls covering sour water processing sewers and the brine treatment unit discharge points. Mercury and mercury compounds should be addressed at the internal monitoring points.

Internal outfalls and monitoring points are advantageous for wastewater treatment stewardship, regulatory accountability and individualized treatment process efficacy

monitoring in the control of toxic and hazardous industrial wastewater constituents. The reason for this advantage of internal outfalls and sampling points is that direct monitoring at the treatment unit outlet of a treatment unit allows process-individualized toxicant detection and monitoring of the specific internal monitoring point in question. A second important benefit of internal monitoring points for Applicant's facility is that wastewater analytical method detection and quantification limits pose much less of a problem for internal monitoring points when flows at such internal outfalls are not diluted by other process, cooling water and stormwater flows as they are at the point of final effluent discharge.

Response 34:

There has been no demonstrated need to require internal monitoring points at any additional locations to determine compliance with the final effluent limits and the technology based effluent limits required by the federal effluent limitation guidelines for petroleum refining (40 CFR Part 419). Technically, Outfall 005 effluent is measured at an internal point prior to being released into the discharge pipe leading to the diffuser because the point of discharge is submerged in Lake Michigan, but that point occurs after the wastewater has received all treatment which is the ideal location to monitor for compliance with the final effluent limits. No additional internal monitoring points will be included in the permit.

Comment 35:

Additionally, the Outfall #002 annual total organic carbon monitoring frequency is too infrequent to be able to ensure that applicant can ensure regular compliance with effluent limitations. The Outfall #002 effluent limitation table contains an effluent limitation on the net total organic carbon concentration but only requires one analytical sample annually. Such limited monitoring cannot be used by Applicant to ensure that its effluent complies with the stated effluent limitation. More regular monitoring should be required and the frequency and internal monitoring point locations should be established in the cooling water system for the refinery so that cooling water TOC monitoring can detect the process group location of any leaking heat exchangers which may allow petroleum hydrocarbons to enter the cooling water circuit.

Response 35:

BP Products North America, Inc. has implemented a program to monitor each of their Heat Exchange Systems in the cooling water system on a monthly basis to measure the concentration of methane in accordance with a Clean Air Act rule found at 40 CFR 63.654 (effective on October 29, 2012). This system is designed to discover leaks within the cooling water system and all leaks must be repaired within 45 days after detection.

IDEM believes that the cooling water heat exchanger monitoring system required by 40 CFR 63.654 will be more effective at detecting and correcting any leaks in the heat exchanger systems at BP than increased monitoring for Total Organic Carbon at the

final Outfall 002. Therefore, IDEM does not see a need at this time to increase the monitoring frequency for TOC in the final permit.

Comment 36:

Various Aspects of the Monitoring Requirements Need to be Strengthened and Clarified

IDEM should revise and amend the format of its permit effluent limitation tables or supplement the presentation of such information in a manner so that each monitoring requirement provided in the permit indicates the specific EPA analytical method or other specific technical method the Applicant is required to use in carrying out its effluent monitoring activity. In addition to listing the specific analytical method for each pollutant, IDEM should also list what Limit of Detection ("LOD") and Limit of Quantification ("LOQ") for each monitored pollutant that Applicant is expected to demonstrate in carrying out the EPA or other technical analytical method for wastewater characterization.

For all of the monitored pollutants that are subject to 24-hour composite sampling requirements, IDEM should publish a determination in the Fact Sheet that such 24 hour composite sampling collection and methods are compatible and consistent with maximum sample holding time requirements of the specific technical analytical method for the specific pollutant in question.

Footnote #4 for the Outfall #002 is too vaguely stated to be enforceable in practice. "Net temperature" is not defined, and this term is not a unit or a valid physical description of the effluent limitation shown in the table as maximum heat release in BTU's per hour. References to 'appropriate conversion factor' are similarly vague. Footnote #4 should be replaced with a clearly stated method of calculating the hourly heat released from calculation of intake and outfall energy rates using equations and defined variables as stated in the calculation methodology.

Since the aquatic toxicity of ammonia depends on temperature and pH in addition to the ammonia concentration, on how compliance with Indiana Water Quality Standards addressing ammonia is maintained both inside of the mixing zone and at the edge of the mixing zone without requiring continuous measurement of both temperature and pH to support assurance of maintenance of WQS for ammonia.

Response 36:

The heatload shall be calculated by subtracting the average 24 hour temperature value of the intake water from the average 24 hour temperature value of the gross discharge every hour, converting to BTU/hr by multiplying the temperature difference by the average 24 hour discharge flow and the appropriate conversion factor. BP uses instrumentation to measure temperature on a continuous basis except for periods of downtime, maintenance, repair or upset.

Section 6.2 will be added to the Fact Sheet: Analytical and sampling methods used shall conform to 40 CFR 136 as referenced in 327 IAC 5-2-13(d)(1).

In accordance with 327 IAC 5-2-11.6(h), the analytical method, LOD and LOD must be specified in the permit when a WQBEL for a pollutant is calculated to be less than the LOQ. Therefore, WQBELs greater than the LOQs don't require a list of approved methods to be included in the permit. The permittee can use methods approved in Part 136 as long as they are sensitive enough. Using methods that are approved but have high(er) levels of detection are not necessarily desirable by the permittee since IDEM would set the concentration of the discharge at the detection level when determining the projected effluent quality. It would always be in the permittees best interest to use the method with the lowest detection level to determine the most accurate waste characterization (effluent quality) of the discharge.

Comment 37:

**Proposed Changes Part IA1
Outfall 005**

- Update the description of Outfall 005 to match the language in the fact sheet on page 4 paragraph 6. IDEM should delete NiSource Whiting Clean Energy (we no longer take their wastewater as of November 2007) and should include Praxair and other related offsite facilities such as pipelines and tenninals .
- Typo for Phenolics: We believe it should be 24 hour composite. Same as previous permit. We have an acceptable compositor for this sampling.
- Typo for Sulfide. Sulfide was requested to be a grab sample so preservation can be done properly. BP requested this in response to an EPA recommendation concerning sampling procedures. We believe IDEM inserted "Grab" for Phenols mistakenly instead of Sulfide
- A notation should be added to the table under footnote (5) clarifying that BP should use EPA Method 1631, Revision E or the most current version of that method, if later revisions are approved. The following sentence is taken from footnote (5): If EPA Test Method 1631, Revision E is further revised during the term of this permit, the permittee and/or its contract laboratory is required to utilize the most current version of the method as soon as possible after approval by EPA but no later than the second monitoring event after the revision.

Part 1A2 Outfall 002

- We now have continuous temperature indicators for our intake and discharge. See proposed language changes in redline permit to reflect the appropriate monitoring and calculation.

Part IA3 Outfall 003/004

- Typo on Description of Outfall : delete extra quote mark

Section B, C

- Section B typo. Should be Section C Monitoring and Reporting

Section D

- Section D needs to be reworded or deleted. The inclusion of Outfall 005 in the stormwater requirements is not appropriate here. See attached redline copy of permit language changes needed if section D not deleted. Decision needed: Do we require SWPPP for storm water that is collected and treated?
- Please also find below additional justification to remove this language.

Response 37:

The description of Outfall 005 in the permit has been corrected as requested.

IDEM has determined that the appropriate sample type for Phenolics is a grab sample. Therefore, the request to change the sample type for phenolics to a 24 hour composite is denied.

IDEM has determined that the appropriate sample type for Sulfide is a 24 Hour Composite. Therefore, the request to change the sample type for Sulfide to a grab sample is denied.

Footnote [5] for Outfall 005 includes the following language:

The following EPA test methods and/or Standard Methods and associated LODs and LOQs are to be used in the analysis of the effluent samples. Alternative methods may be used if first approved by IDEM.

<u>Parameter</u>	<u>EPA Method</u>	<u>LOD</u>	<u>LOQ</u>
Mercury	1631, Revision E	0.2 ng/l	0.5 ng/l

Proposed changes to Part IA2 of the permit regarding temperature monitoring and reporting have been made

The typos have been corrected.

Outfall 005 is no longer required to develop a SWPPP for the refinery area that

discharges through Outfall 005.

Comment 38:

Part J.D. Storm Water Monitoring and Non-Numeric Effluent Limits

BP requests that IDEM remove this part of the Draft Permit in its entirety. Stormwater monitoring and numeric effluent limits already are provided for Outfalls 003 and 004 in part I.A and I.E. As a result, there is no need for extensive monitoring or non-numeric effluent limits such as those proposed here. BP's stormwater performance is exemplary. Given only one exceedance in the past five years at a stormwater outfall, there are no significant problems that would require such a substantial revision to the stormwater portion of the Draft Permit.

In addition, the industrial activities occurring in the areas contributing to Outfalls 003 and 004 are minimal; these areas consist of tank farms and containment dikes only. Further, BP already has instituted sufficient control measures for these areas. In addition to its SWPPP, BP has the ability to retain stormwater in the tank dikes for infiltration and evaporation, or removal via vacuum trucks or manual pumping to the refinery process sewer system if an oil sheen is present. See Draft Fact Sheet at p. 8. As a result, the proposed Part I.D. requirements are either inapplicable or unnecessary. The stormwater provisions contained in the current Permit, along with the monitoring and numeric effluent limitations imposed at Outfalls 003 and 004, are more than sufficient to ensure that BP's stormwater discharges comply with all applicable Clean Water Act (CWA) requirements.

The Fact Sheet describes the proposed stormwater requirements as follows: According to 40 CFR 122.26(b)(14)(ii), facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29,311, 32 (except 323), 33, 3441, 373 are considered to be engaging in 'industrial activity' for purposes of 40 CFR 122.26(b). Therefore, the permittee is required to have all storm water discharges associated with industrial activity permitted. Treatment for storm water discharges associated with industrial activities is *[sic]* required to meet, at a minimum, best available technology economically achievable/best conventional pollutant control technology (BAT/BCT) requirements. EPA has determined that non-numeric technology-based effluent limits have been determined to be equal to BPT/BAT/BCT for storm water associated with industrial activity.

Draft Fact Sheet at 30 (emphasis added). EPA's determination, however, fails to consider that no such minimum requirements are necessary where a stormwater discharge already is controlled by numeric effluent limits and existing control measures that will provide complete treatment at the facility's wastewater treatment plant if necessary to prevent any non-compliant discharge. In addition, EPA's determination appears to require incorporation of many provisions taken directly from its own Multi-Sector General Permit (MSGP). Application of such provisions is both premature and inappropriate, because IDEM has not adopted the MSGP

into its Rule 6 permits or any replacement general permit for stormwater discharges associated with industrial activity. IDEM has no authority to adopt the federal MSGP on a case-by-case basis in NPDES permits, without the benefit of a formal rulemaking process.

Further, a number of the stormwater provisions proposed in Part I.D. of the Draft Permit are not authorized by the CWA. Certain provisions attempt to regulate stormwater flow and velocity. The CWA and applicable regulations, however, only authorize the control of pollutant discharges to waters of the state. Stormwater flow is not a pollutant. See, e.g., *Virginia DOT v EPA*, No. 1:12-CV-775 (E.D. Va. Jan. 3, 2013). Other provisions attempt to control activities occurring on the BP facility that do not result in pollutant discharges. As noted above, BP's stormwater discharges are sufficiently controlled by application of the numeric effluent limits applied at Outfalls 003 and 004, the stormwater provisions contained in the current Permit, and the existing control measures noted in the Draft Fact Sheet that allow BP to retain stormwater in tank dikes for infiltration and evaporation, or removal via vacuum trucks or manual pumping to the refinery process sewer system if needed. No further measures are necessary or authorized. Therefore, BP requests that Part I.D. be removed from the Draft Permit. All statements concerning this part should be removed from the Fact Sheet.

Response 38:

IDEM has revised Part I.D. of the permit. This provision now includes special conditions which implement the SWPPP. These provisions were previously in Part I.D. (Storm Water Pollution Prevention Plan Requirements) of the 2007 permit.

References to non-numeric effluent limits and their equivalence to BPT/BAT/BCT were deleted from the fact sheet.

The NPDES permit will retain the requirement to develop a SWP3 for the storm water from Outfalls 003 and 004 at the BP facility. Storm water collected within the refinery area is treated using the wastewater treatment system that is used to treat all of the process wastewater from the refinery. The addition of storm water equalization tanks ensures capture of all the storm water that is exposed to industrial activity within the refinery area. The storm water collected within the refinery area is then treated at the process advanced biological wastewater treatment system which consists of the following treatment components: oil/water separators, dissolved air flotation, activated sludge treatment plant, clarifier and final filtering processes.

This level of storm water collection and advanced wastewater treatment of the collected storm water from the refinery area that discharges through Outfall 005 meets the BAT requirement for storm water associated with industrial activity as required by 40 CFR 419. Because of this level of treatment there are no requirements in Parts I.D. or I.E. related to the stormwater being discharged through Outfall 005. Parts I.D. and I.E.

apply to storm water at outfalls 003 and 004.

Comment 39:

In the event that IDEM does not remove Part I.D., BP has additional comments, as follows:

Part I.D. Storm Water Monitoring and Non-Numeric Effluent Limits (p12 of 51)

BP requests that the following language from the current permit be added at the end of the first paragraph to clarify that all stormwater requirements apply only to activities related to the discharge at Outfalls 003 and 004:

Notwithstanding any other provision of this permit, the Storm Water Monitoring and Non-Numeric Effluent Limits and SWP3 are not required to address storm water discharges that are routed to treatment and then discharged through Outfall 005.

Response 39:

This statement is included in the revised permit.

Comment 40:

Part I.D.1 Control Measures and Effluent Limits (page12 of 51)

The definition of the term "minimize" as set forth in this section is too vague to allow BP to determine what is necessary to achieve compliance, and should be removed.

Response 40:

This provision has been removed from the revised permit.

Comment 41:

Part I.D.2 Control Measures (p13 of 51)

As noted above, the non-numeric effluent limits proposed in this section are unnecessary and unauthorized. The BP stormwater discharges are sufficiently controlled through application of numeric effluent limits at Outfalls 003 and 004, the stormwater provisions contained in the current Permit, and existing control measures that allow BP to retain stormwater in tank dikes for infiltration and evaporation, or removal via vacuum trucks or manual pumping to the refinery process sewer system if needed. The industrial activities that contribute

stormwater to Outfalls 003 and 004 consist of tank farms and retention dikes only. As a result, no further control measures are necessary. BP requests that IDEM add language to this subpart to acknowledge the sufficiency of existing control measures.

In addition, BP requests that the provisions concerning stormwater run-on be removed. As indicated in the Fact Sheet at p9, run-on does not mix with stormwater from industrial activity at the facility. Further, BP should not be responsible for controlling pollutants in flows that it has no control over, and that are not associated with BP's industrial activities.

Response 41:

See Response 38.

Comment 42:

Part I.D.3 Control Measure Selection and Design Considerations (p13 of 51)

Provisions containing general guidance or advice rather than enforceable terms or conditions should be removed from the body of the Permit and contained in the Fact Sheet only. IDEM has authority to regulate the discharge of pollutants in the Permit, and should not attempt to regulate how stormwater may or may not contact materials on site. Further, evaluation of such elaborate considerations should not be required for areas in which very limited industrial activities (tank farm storage) occur.

Response 42:

See Response 38.

Comment 43:

Part I.D.4.a. Minimize Exposure (p14 of 51)

The minimization requirements contained in this section are too vague to allow BP to determine what is necessary to achieve compliance, and should be removed. Further, evaluation of such elaborate considerations should not be required for areas in which very limited industrial activities (tank farm storage) occur. In addition, provisions containing general guidance or advice rather than enforceable terms or conditions should be removed from the body of the Permit. If necessary, that guidance can be provided in the Fact Sheet. BP requests that IDEM add language to this subpart or acknowledge the sufficiency of existing control measures, and to require additional measures only if existing measures are not working, and only as necessary to control stormwater discharged from tank storage areas. BP also requests language clarifying that this subpart does not

apply to any discharges that are routed to treatment and discharged through Outfall 005.

Response 43:

The language in Parts I.D. and I.E. has been appropriately modified to be more specific to the Whiting Facility.

Comment 44:

Part I.D.4.b. Good Housekeeping (p15 of 51)

These provisions are inapplicable to tank storage areas, and should be removed.

Response 44:

IDEM modified both Parts I.D. and I.E. to be more site specific.

Comment 45:

Part I.D.4.d. Spill Prevention and Response Procedures (p15 of 51)

Labeling, spill response, and reporting requirements are governed by other laws, and are outside the authority granted to IDEM under the CWA and applicable state laws and regulations. BP will comply with such requirements under other applicable laws, and should not be subject to potential liability under its NPDES Permit as well.

Response 45:

Where the requirements are being satisfied by other area's or applicable laws, then these are referenced in the SWP3. Some facilities have indicated that they were already doing some of the items to satisfy their Title V requirements and IDEM included alternative language to address the redundancy. BP can propose alternate or additional language but IDEM is not removing the language. If the permittee has other written plans, required under applicable federal or state law, such as operation and maintenance, spill prevention control and countermeasures (SPCC), or risk contingency plans, which fulfill certain requirements of an SWP3, these plans may be referenced, at the permittee's discretion, in the appropriate sections of the SWP3 to meet those section requirements. (See Part I. E(2)(d)(4))

This provision was replaced with Part I.D.1.a(1) which implements spill prevention provisions in Part I.D.2.c(2) of the 2007 permit.

Comment 46:

Part I.D.4.e. Erosion and Sediment Controls (pp15-16 of 51)

IDEM has no authority over "onsite" erosion that does not discharge to waters of the state, nor does it have authority to regulate stormwater flow. BP requests that this provision be removed. BP already has instituted an SWP3 and existing control measures sufficient to ensure compliance with all CWA requirements. In addition, provisions containing general guidance or advice (such as "you are encouraged to check out information from both the State and EPA websites") rather than enforceable terms and conditions should be removed from the body of the permit. If necessary, that guidance can be provided in the Fact Sheet.

Response 46:

This provision was replaced with Part I.D.1.b which implements the erosion and sediment control provisions in Part I.D.2.c(2) of the 2007 permit.

Comment 47:

Part I.D.4.f. Management of Runoff(p16 of 51)

IDEM has no authority to regulate stormwater flow or mandate infiltration, reuse, or other flow restrictions. In addition, BP already has instituted control measures that provide for infiltration and evaporation or treatment as necessary to prevent non-compliant discharges. However, such measures should not be required unless necessary. BP requests that this provision be removed.

Response 47:

IDEM modified both Parts I.D. and I.E. to be more reflective of the activities more specific to the BP Whiting Facility. This provision was replaced with Part I.D.1.b which implements the runoff management provisions in Part I.D.2.c(2) of the 2007 permit.

Comment 48:

Part I.D.4.g. Salt Storage Piles or Piles Containing Salt (p16 of 51)

BP requests that this subpart be removed as inapplicable to the tank farm areas that contribute stormwater to Outfalls 003 and 004.

Response 48:

IDEM modified both Parts I.D. and I.E. to be more reflective of the activities more specific to the BP Whiting Facility. This provision was removed from the permit.

Comment 49:

Part I.D.6. Corrective Actions- Conditions Requiring Review (pp17-18 of 51)

This provision is too vague to allow BP to determine what is necessary to achieve compliance, and improperly attempts to regulate activities already governed by other parts of the CWA and other regulations. BP requests that this provision be removed.

Response 49:

This provision simply requires that BP take corrective action in certain instances (i.e., an unauthorized discharge) and to document how the issue was addressed.

Comment 50:

Part I.D.7. Corrective Action Deadlines (p18 of 51)

This section should be removed because the corrective actions that it references are too vague to allow BP to determine what is necessary to achieve compliance, and attempts to regulate activities already governed by other parts of the CWA and other regulations. In addition, many of the provisions are inapplicable to the tank storage activities occurring in the areas contributing stormwater to Outfalls 003 and 004.

Response 50:

See Response 49

Comment 51:

Part I.D.S. Corrective Action Report (p18 of 51)

This section should be removed because the corrective actions that it references are too vague to allow BP to determine what is necessary to achieve compliance, and attempts to regulate activities already governed by other parts of the CWA and other regulations.

Response 51:

See response 49.

Comment 52:

Part I.D.9. Inspections (pp19-21 of 51.)

The provisions contained in the current Permit are sufficient to ensure adequate

inspections. These provisions are overly restrictive and attempt to govern activities outside IDEM's NPDES authority, which already are governed by other legal and regulatory requirements. In addition, many of the provisions are inapplicable to the tank storage activities occurring in the areas contributing stormwater to Outfalls 003 and 004. BP requests that this provision be removed.

Response 52:

This provision was deleted and replaced with Part I.D.1.a.(4) and Part I.D.6 which implements the inspection and comprehensive site compliance evaluation provisions from Parts I.D.2.c(1)(D) and I.D.2 of the 2007 permit.

Comment 53:

Part I.E. Storm Water Pollution Prevention Plan (pp21-27 of 51)

For the reasons described above, BP requests that this provision be removed and replaced with the SWP3 provisions contained in the current Permit. The current Permit conditions, as well as the numeric effluent limits imposed at Outfalls 003 and 004, and BP's existing control measures are more than sufficient to ensure BP's continued compliance with all applicable CWA requirements. All statements contrary to the SWPPP provisions contained in the current Permit should be removed from the Fact Sheet. In the event that IDEM does not revert to the SWP3 requirements contained in the existing permit, BP has the following additional comments:

Response 53:

IDEM modified the language in both Parts I.D. and I.E. for Outfalls 003 and 004 to be more reflective of the activities at the BP Whiting Site. The storm water special conditions and SWP3 requirements. These two provisions essentially are equivalent to Part I.D. of the 2007 permit.

Comment 54:

Section E

El needs edits to language: "... the permittee is required to revise and update the current Storm Water Pollution Prevention Plan (SWP3) for storm water outfalls 003 and 004 for the permitted facility". Outfall 005 is a process waste water discharge not storm water. All stormwater from the refinery areas is collected and commingled in the process sewers and fully treated as process wastewater. IDEM should revise the language consistent with the current permit.

Response 54:

This provision has been revised to apply only to outfalls 003 and 004.

Comment 55:

Add to section E1 line "d" to be the same as the current permit language.
"d. Notwithstanding any other provision of this permit, the SWP3 is not required to address storm water that is routed to treatment and then discharged through Outfall 005."

Response 55:

This provision has been revised as requested

Comment 56:

Remove all provisions in E2b, c, and d that are inconsistent with or unnecessary to control of storm water discharges from tank storage areas, where very limited industrial activities occur.

Response 56:

The following provisions has been deleted: Parts I.E.2.b(2)(G), (H), (O), (P), and (T); Parts I.E.2.b(6); and Parts I.E.2.c(1)(A) and (B).

Comment 57:

Part E2d3 edit language to be consistent with annual basis, or within one year (not 365 days)

Response 57:

This provision has been revised to require the SWP3 be updated within one of the effective date of the permit.

Comment 58:

Section F and G

Typo on F5 : non vandium, delete 0

Section G 1c (1): BP requests that IDEM add "from time of last aliquot."

Response 58:

IDEM agrees to change the permit language as requested.

Comment 59:

Section G now has Acute Toxicity value of 11 TUa. BP requests that IDEM explain in the Fact Sheet the basis for inclusion of this trigger value, including that there is no reasonable potential for the BP discharge to exceed that value and no other toxicity concerns at this time.

Response 59:

IDEM acknowledges that there has been no failure of WET tests to indicate that there is a reasonable potential to exceed the Acute and Chronic trigger values of 11 acute toxic units and 38 chronic toxic values. BP is being required to monitor their effluent for toxicity due to the source and nature of the discharge. Any discharge from a petroleum refinery has potential to cause toxicity and this monitoring program will ensure that the effluent from the BP Whiting Refinery will not become toxic to the point that it harms the environment. IDEM's whole effluent toxicity language always includes the trigger values in appropriate toxic units. Because of the diffuser (which modifies the dilution ratio) both the acute and chronic values are affected. For chronic toxicity testing the acute toxicity levels are typically extrapolated from the chronic values.

Comment 60:

BP also requests that IDEM explain the basis for inclusion of two test species for biomonitoring, when the facility already has determined that the flathead minnow is the most sensitive species.

Response 60:

IDEM believes it is prudent with each permit renewal to start over anew using both test species to account for all changes in the feedstock and wastewater treatment system that may impact the toxicity of the effluent.

After four tests have been completed, the permittee may reduce the number of species tested to only include the most sensitive to the toxicity in the effluent. In the absence of toxicity with either species in the monthly testing for four (4) months in the current tests, sensitive species will be selected based on frequency and failure of whole effluent toxicity tests with one or the other species in the immediate past.

Comment 61:

Part II

- Part II A4: Delete second paragraph last part "and NiSource ..." and add Praxair.

- Part II A17a include ... "that causes significant lowering of water quality" to complete the sentence as in the rule (327 IAC 2-1.3-3(c)(I)). The rule does not prohibit all new or increased discharges of BCCs other than mercury, but only those that cause a significant lowering of water quality.
- Part II B 3c1 Upset Conditions. Include "if possible" same as previous language, consistent with 327 IAC 5-2-8(12).
- Typo II C 1b delete comma and add "d" to discharge.
- Typo II C 1b add "However, this requirement does not apply to the permittee's use or manufacture of a toxic pollutant solely under research or laboratory conditions." This will ensure that the permit is consistent with IAC 5-2-9(2)

Response 61:

All references to NiSource and Praxair have been corrected in the permit

IDEM believes that the permit language regarding any increased discharge of Mercury is in compliance with 327 IAC 2-1.3.

Part II.A of the permit has been completely revised to include updated language that should have been in the permit. The existing permit was erroneously copied and used as the draft permit which contains the outdated standard language.

The phrase "if possible" is found in Indiana rules but it is not found in the federal language at 40 CFR Part 122.41(n). EPA has made comments about this discrepancy on previous permits that IDEM must be as stringent as the federal regulations, so IDEM has removed the phrase "if possible" from the permit template language.

IDEM has agreed to add the following sentence to Part II.C.1 (b): However, this requirement does not apply to the permittee's use or manufacture of a toxic pollutant solely under research or laboratory conditions.

Comment 62:

Part III

Part B third paragraph: remove from the last sentence "fish return alternatives must be evaluated" and continue to list the items required to avoid confusion on what is required.

B2 should be removed or reworded such that BP will comply with the final rule for 316 (b) and notify IDEM of the plans for compliance in accordance with the rule requirements.

Response 62:

The requested language has been included in the NPDES permit.

Comment 63:

Part IV

Part IV B annual reports: should provide a hard date such as April 1 each year

BP requests that Part IV.D.3-6 be removed. These activities already have been completed, and need not be included in the permit.

Response 63:

The SMV annual reports will now be due on April 1st of each year. Items 3 through 6 in Part IV.D of the permit have been removed from the permit as requested.

Comment 64:

FACT Sheet Corrections/Comments:

BP also requests that IDEM indicate in the Fact Sheet that the SMV, including the PMPP, has been reviewed and approved by both IDEM and EPA.

p3, paragraph 7: Typo on Canadian Extra Heavy Crude.

p4, paragraph 6: Eliminate Whiting Clean Energy (they no longer send us any waste water as of November 2007 they send their waste water to City of Whiting).

p5, paragraph 11: IDEM did not revise the sulfide sampling to "grab," Done

p5, paragraph 14: IDEM did not include retreatment of off-spec WWTP effluent in the description of waste streams for Outfall 005 in the permit as it is included in the fact sheet.

p11, section 2.3, second paragraph: Add Clarifier as part of WWTP, remove Grit Chamber (it is out of service) also delete the sentence with NiSource Whiting Clean Energy and Ineos and add new sentence in place as follows: "BP also accepts and treats stormwater from Ineos at the wastewater treatment plant and the retreatment of off-spec WWTP effluent". Note that as of 2012 Ineos plant is permanently shut down only stormwater is routed to BP WWTP.

p12: Modify paragraphs on Whiting Clean Energy and Ineos. Add last sentence to

Whiting Clean Energy paragraph as follows : "This has now been permitted to discharge to the City of Whiting and not to BP". Add last sentence to Ineos as follows : "As of 2012 the Ineos plant has since shutdown, but has only stormwater that drains directly to our WWTP". Delete Whiting Clean Energy from third paragraph under Ineos.

P15: There is an updated WWTP flow diagram (July 2012) that was submitted to IDEM when the final filters were replaced . This flow diagram should be used.

p18: The final filters are already installed . Replace the words "will be replaced" with "have been replaced"

p18: New/Upgrade Dissolved Air Flotation (DAF): paragraph should be modified to state "...installation of a new DAF or DNF to replace the existing DAF unit by Dec 31,2015."

p. 8: The PH limit of 9.0 exceeded in Jan 2010 is from Outfall 004 not 005. Create a separate note for Outfall 004 exceedances.

p22: Typo on first paragraph TEBLS should be TBELS.

p29, section 5.4: IDEM did not include how and why an acute value was added or justification for including a second test species. Please expand on that.

p30, section 5.6: Need to add the rest of 327 IAC 2-1.3 to end of sentence a: "...that causes a significant lowering of water quality."

p32, section 5.7: We do not agree that technology -based effluent requirements are needed for stormwater at Outfall 005, except to the extent of the limits included for Outfalls 003 and 004. These requirements in the permit and the Fact Sheet discussion should be deleted.

p32, 5th paragraph: Something appears to be missing in the last sentence describing the new stormwater equalization tank. "As with existing equalization/stormwater tanks,a 10 million gallon tank with an internal roof domed tank." Suggest delete the sentence, not needed.

p35, 4th paragraph: "it could be" should be deleted from the last sentence.

p37, WET: IDEM provided no justification for inclusion of an acute limit in the absence of RPE, or for adding another test species . Please clarify.

p43, 5th paragraph: Typo. "frazzle" should be "frazil"

p48, 1st standalone paragraph: IDEM has failed to explain why fish return alternatives must be evaluated when it has made a determination that the existing

structures represent the best technology available to minimize adverse environmental impact. There is a concern that new rules may not even require this

p50, Section 6.3: It is recommended that IDEM include the fact that both IDEM and EPA reviewed and approved BPs mercury variance application and pollutant minimization plans.

p55, It should be noted that items 3, 4 and 5 need of the PMPP have been completed .

Response 64:

Changes to the Fact Sheet have been made.as appropriate.

Comment 65: Submitted by Mr. Don Wilson on June 14, 2013

Zorbtech Environmental Solutions would like to submit a request to be participate in the trials now being implemented at Whiting Refinery. Mr. Bill Purves will be emailing you our results from some of our previous field work. Zorbtech has developed one of the most efficient adsorbents on the market for the removal of dissolved mercury and in our last set of tests was able to reduce the level of mercury from 20ppt to 3.91ppt in 3 mins .

I have also included a article outlining the project we conducted at the PPG Chlor Akali plant in WV. I look forward to meeting you and your team in the very near future and demonstrate our technology to you. I firmly believe this is the most efficient adsorbent on the market today for the removal of soluble mercury.

Response 65:

Thank you for making IDEM aware of your product designed to remove dissolved mercury from wastewater using adsorption. The Purdue/Argonne studies included an evaluation of mercury adsorption technology on the effluent from BP. Most of the mercury in the BP wastewater was found to be in particulate form and very little mercury (<1.0 ng/l) was found to be in the dissolved form. Researchers found that removal of particulate mercury by filtration was sufficient to meet the 1.3 ng/l WQBEL for mercury.